

## CLAIMS

What is claimed is:

1           1.       A method for allocating multiple communications streams of a wireless  
2 communications system comprising:

3                   identifying a first terminal and a second terminal to each other for the  
4 communication of traffic over at least one of multiple streams; and

5                   dynamically allocating and de-allocating further streams based on the  
6 traffic to be carried and the traffic capacity of opened streams between the first and the  
7 second terminals.

1           2.       The method of Claim 1, further comprising opening a stream for  
2 communications between the first terminal and the second terminal before dynamically  
3 allocating and de-allocating.

1           3.       The method of Claim 1, wherein dynamically allocating and de-allocating  
2 comprises comparing traffic to be carried between the first terminal and the second  
3 terminal to the capacity of any open streams between the first terminal and the second  
4 terminal and allocating or de-allocating at least one stream based on the comparison.

1           4.       The method of Claim 1, wherein dynamically allocating and de-allocating  
2 comprises comparing depths of transmit queues to the capacity of any open streams  
3 between the first terminal and the second terminal and allocating or de-allocating at least  
4 one stream based on the comparison.

1           5.       The method of Claim 1, wherein dynamically allocating and de-allocating  
2 comprises receiving messages from higher layers regarding traffic demands and  
3 comparing the traffic demands to the capacity of any open streams between the first

terminal and the second terminal and allocating or de-allocating at least one stream based on the comparison.

6. The method of Claim 1, further comprising distributing upstream packets between all allocated streams for transmission to the second terminal and recombining transmitted data received from the second terminal into packets at the first terminal.

7. The method of Claim 1, wherein identifying a first terminal and a second terminal to each other comprises registering a first terminal and a second terminal with each other for opening and closing multiple streams.

8. A machine-readable medium having stored thereon data representing sequences of instructions which, when executed by a machine, cause the machine to perform operations comprising:

identifying a first terminal and a second terminal of a wireless communications system to each other for the communication of traffic over at least one of multiple streams; and

dynamically allocating and de-allocating further streams based on the traffic to be carried and the traffic capacity of opened streams between the first and the second terminals.

9. The medium of Claim 8, further comprising instructions which, when executed by the machine, cause the machine to perform further operations comprising opening a stream for communications between the first terminal and the second terminal before dynamically allocating and de-allocating.

10. The medium of Claim 8, wherein the instructions for dynamically allocating and de-allocating further comprise instructions which, when executed by the machine, cause the machine to perform further operations comprising comparing traffic

4 to be carried between the first terminal and the second terminal to the capacity of any  
5 open streams between the first terminal and the second terminal and allocating or de-  
6 allocating at least one stream based on the comparison.

1 11. The method of Claim 8, wherein dynamically allocating and de-allocating  
2 comprises comparing depths of transmit queues to the capacity of any open streams  
3 between the first terminal and the second terminal and allocating or de-allocating at least  
4 one stream based on the comparison.

1 12. A first terminal of a wireless communications system comprising:  
2 a registration algorithm to identify the first terminal and a second terminal  
3 to each other for the communication of traffic over at least one of multiple  
4 communication streams of the communications system;  
5 a channel allocation algorithm to dynamically allocate and de-allocate  
6 further streams based on the traffic to be carried and the traffic capacity of opened  
7 streams between the first and the second terminals; and  
8 a data distribution algorithm to distribute upstream packets between all  
9 allocated streams for transmission to the second terminal and recombining transmitted  
10 data received from the second terminal into packets at the first terminal.

1 13. The apparatus of Claim 12, wherein the channel allocation algorithm  
2 compares traffic to be carried between the first terminal and the second terminal to the  
3 capacity of any open streams between the first terminal and the second terminal and  
4 allocates or de-allocates at least one stream based on the comparison.

1 14. The apparatus of Claim 12, wherein the channel allocation algorithm  
2 compares depths of transmit queues to the capacity of any open streams between the first

terminal and the second terminal and allocates or de-allocates at least one stream based on the comparison.

15. The apparatus of Claim 12, wherein the channel allocation algorithm receives messages from higher layers regarding traffic demands and compares the traffic demands to the capacity of any open streams between the first terminal and the second terminal and allocates or de-allocates at least one stream based on the comparison.

16. A method for allocating multiple communication streams of a wireless communications system comprising:

comparing traffic to be carried between a first terminal and a second terminal to the capacity of the multiple streams;

allocating at least one stream based on the comparison for communications between the first terminal and the second terminal based on the comparison;

further comparing traffic to be carried between the first terminal and the second terminal after allocating the at least one stream; and

allocating or de-allocating at least one stream based on the further comparison.

17. The method of Claim 16, wherein allocating or de-allocating at least one stream comprises allocating at least one further stream.

18. The method of Claim 16, wherein allocating or de-allocating at least one stream comprises de-allocating the at least one allocated stream.

19. The method of Claim 16, further comprising allocating a stream for communication of traffic between the first terminal and the second terminal before comparing traffic to be carried.

1           20.     The method of Claim 16, wherein comparing comprises looking at the  
2 depth of a transmit queue of at least one of the first and second terminals

1           21.     The method of Claim 16, wherein comparing comprises looking at the  
2 depth of a transmit queue of at least one of the first and second terminals and predicting  
3 the amount of traffic to be carried based on the queue depth.

1           22.     The method of Claim 16, wherein comparing comprises looking at the  
2 depth of a transmit queue of at least one of the first and second terminals and comparing  
3 the queue depth to a threshold queue depth.

1           23.     The method of Claim 16, wherein comparing comprises receiving a  
2 transmit queue depth report at the first terminal from the second terminal and comparing  
3 the queue depth to the traffic capacity of open streams between the first terminal and the  
4 second terminal.

1           24.     The method of Claim 16, wherein looking at the depth of a transmit queue  
2 comprises taking an average of the queue depth at different times and looking at the  
3 average queue depth.

1           25.     The method of Claim 16, further comprising dynamically allocating and  
2 de-allocating streams based on the traffic to be carried and the traffic capacity of opened  
3 streams between the first and the second terminals.

1           26.     A method for allocating multiple communications streams of a wireless  
2 communications system comprising:

3                   opening a first wireless communications stream between a first terminal  
4 and a second terminal for the communication of traffic;

5                   transmitting a transmit queue depth report from the first terminal to the  
6 second terminal;

7 receiving an assignment of a further stream for communications between  
8 the first and the second terminal based on the queue depth report;  
9 transmitting further queue depth reports from the first terminal to the  
10 second terminal; and  
11 receiving stream allocations and de-allocations based on the further queue  
12 depth reports.

1 27. The method of Claim 26, wherein the queue depth report comprises an  
2 average of the depth of a transmit queue of the first terminal at different times.

1 28. The method of Claim 26, further comprising registering the first terminal  
2 and the second terminal with each other for the communication of traffic over at least one  
3 of multiple streams before opening a first stream.